

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) A fluxon injection system comprising:
an annular Josephson junction; and
current injection electrodes electrically connected to a superconducting
electrode of the annular Josephson junction to form the flux injection system.
2. (Original) The system of Claim 1, wherein the annular Josephson junction is a long Josephson junction.
3. (Original) The system of Claim 1, wherein the annular Josephson junction is substantially circular in shape.
4. (Original) The system of Claim 1, wherein the annular Josephson junction is heart-shaped.
5. (Original) The system of Claim 1, wherein the annular Josephson junction has a Lyngby geometry.
6. (Original) The system of Claim 1, wherein the annular Josephson junction forms a qubit.
7. (Original) The system of Claim 1, wherein the annular Josephson junction comprises Nb/Al-AlO_x/Nb.
8. (Currently Amended) The system of Claim 7, wherein the annular Josephson junction has a mean diameter of approximately 100 μm and a junction width of approximately 4 μm $[[4\mu\text{m}]]$.
9. (Currently Amended) The system of Claim 8, wherein spacing between the injection

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electrodes is in a range from approximately 10 μm to approximately 22 μm [[22 μ]].

10. (Original) The system of Claim 1, wherein spacing between the current injection electrodes is between approximately a value of the Josephson penetration depth to approximately a width of the current injection leads.

11-32. (Canceled)